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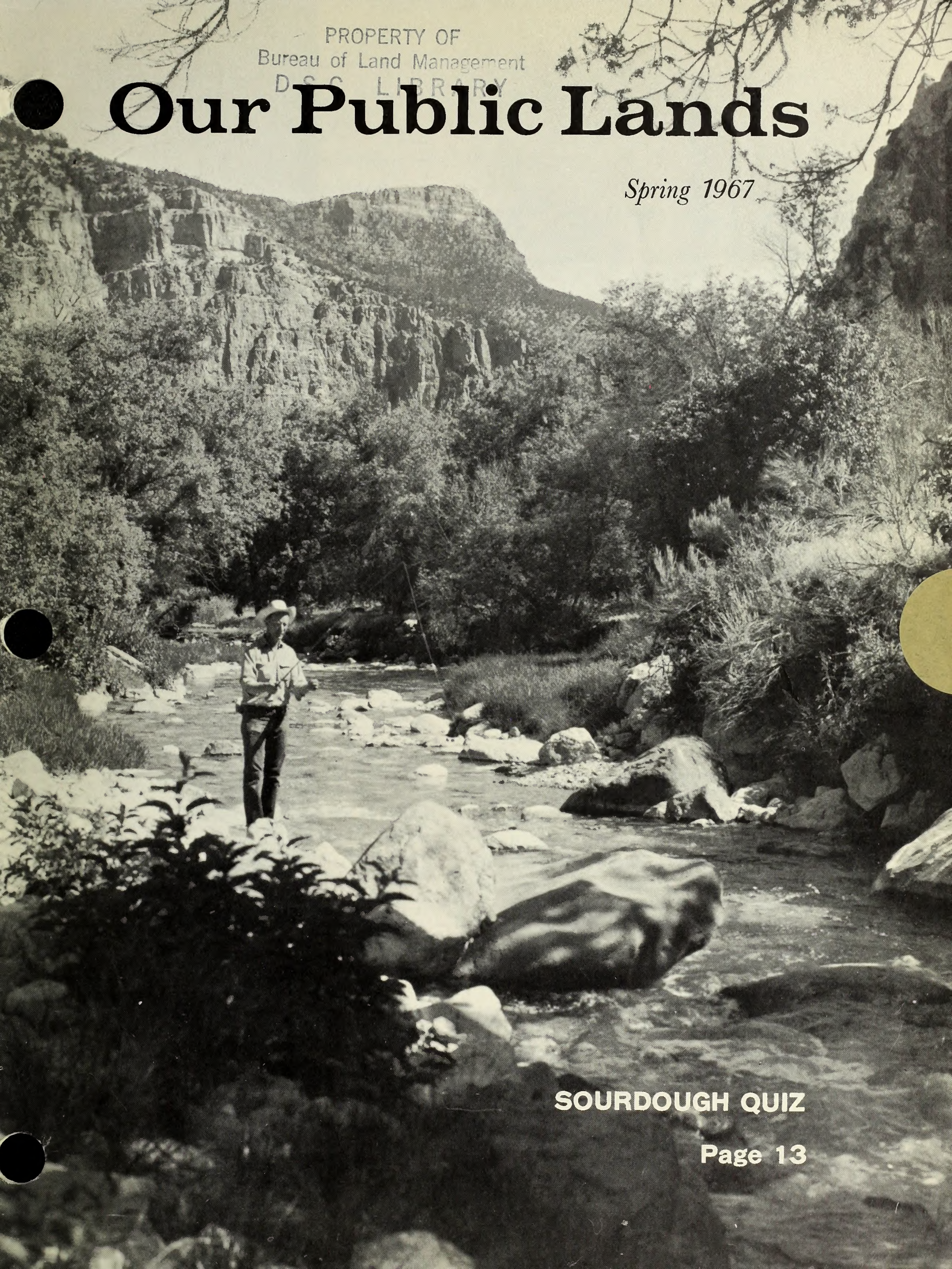
Our Public Lands

Spring 1967



SOURDOUGH QUIZ

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Sourdough Quiz and Answers Compiled by Elmer Shaw.

OUR PUBLIC LANDS
Spring 1967, Vol. 17, No. 1

DEPARTMENT OF THE INTERIOR
Stewart L. Udall, Secretary
BUREAU OF LAND MANAGEMENT
Boyd L. Rasmussen, Director

Created in 1849, the Department of the Interior—a Department of Conservation—is concerned with the management, conservation, and development of the Nation's water, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conser[illegible]tion agency, the Department works[illegible] assure that nonrenewable resources a[illegible] conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.

Issued quarterly by
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D.C. 20240

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Franklin Bradford, Editor.

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LAND LAW REPORT

Commission Members Appointed

Representatives Walter S. Baring (Democrat, Nevada), Roy A. Taylor (Democrat, North Carolina), Morris K. Udall (Democrat, Arizona), and John H. Kyl (Republican, Iowa) have been appointed to the Public Land Law Review Commission by House Speaker John W. McCormack. The new Commission members replace three former Representatives, Compton I. White, Jr., of Idaho, Ralph J. Rivers of Alaska, and Walter Rogers of Texas; and incumbent Representative Rogers C. B. Morton (Republican, Maryland). At the same time, the Speaker reappointed Representatives John Saylor (Republican, Pennsylvania) and Laurence J. Burton (Republican, Utah).

In addition to Chairman Aspinall, the Commission's membership is now as follows:

Appointed by the President: Vice Chairman H. Byron Mock, Salt Lake City, Utah; Laurence S. Rockefeller, New York City; Gov. Philip Hoff, Vermont; Prof. obert Emmet Clark, Tucson, Ariz.; Dr. Maurice God-ard, Harrisburg, Pa.; and Mrs. Nancy E. Smith, San Bernardino, Calif.

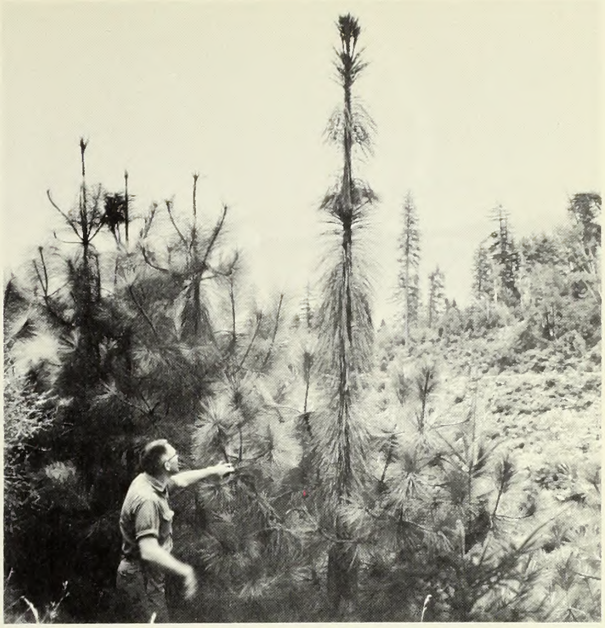
Appointed by the President of the Senate: Senators Henry M. Jackson (Democrat, Washington), Clinton P. Anderson (Democrat, New Mexico), Alan Bible (Democrat, Nevada), Thomas H. Kuchel (Republican, California), Gordon Allott (Republican, Colorado), and Len B. Jordan (Republican, Idaho).

Appointed by the Speaker of the House of Representatives: Representatives Walter S. Baring (Democrat, Nevada), Roy A. Taylor (Democrat, North Carolina), Morris K. Udall (Democrat, Arizona), John P. Saylor (Republican, Pennsylvania), Laurence J. Burton (Republican, Utah), and John Kyl (Republican, Iowa).

Studies and Analyses Planned

Director Milton A. Pearl has announced that the Commission's study program will involve 25 individual studies and analyses on public lands and resources as follows:

1. History of public land law development.
2. Revenue sharing and payments in lieu of taxes.
3. Digest of public land laws.
4. Forage.
5. Administrative rulemaking and adjudication.

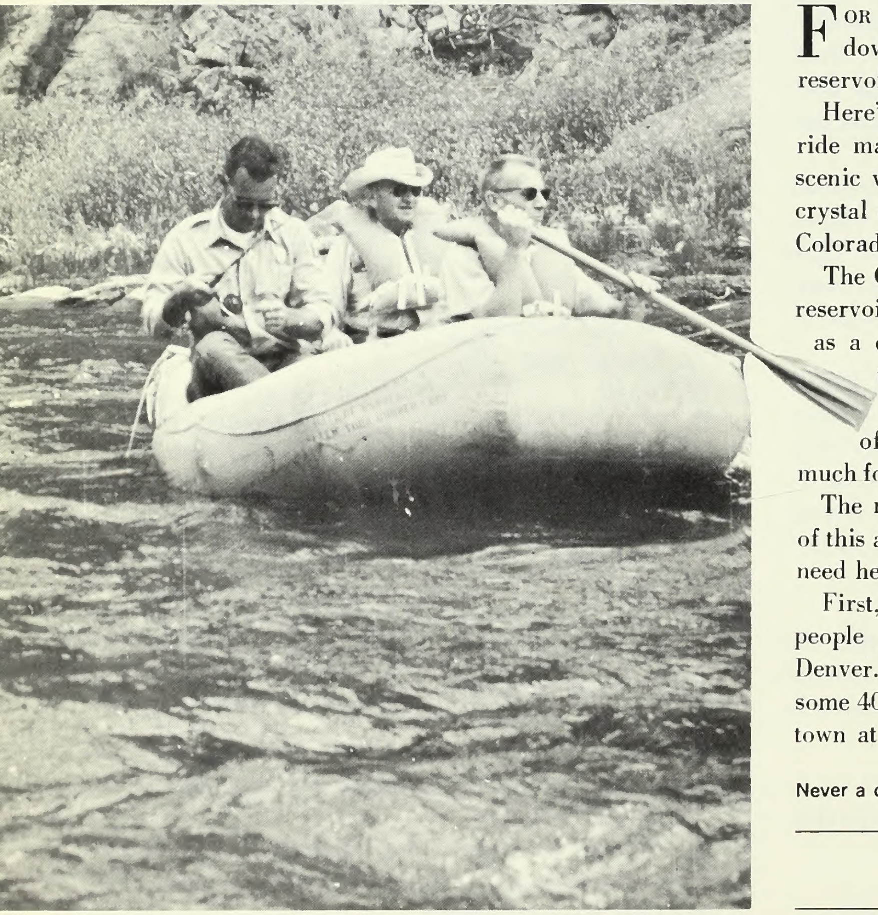


Look Ma, no branches! That could well be the message of a ponderosa pine seedling on public lands in southwestern Oregon. Incredible, say foresters, but this tree grew 10½ feet in 3 years, yet failed to grow two whorls of lateral branches it normally should have grown. BLM Forester Kenneth W. Jensen finds the strange tree behavior true but a little hard to believe. Normal ponderosa seedlings at left stand in contrast with freakish specimen.

6. Land exchanges and acquisitions.
7. Withdrawals and reservations.
8. Alaska.
9. Projection of future national and regional demands for commodities producible from public lands.
10. Timber.
11. Nonfuel minerals.
12. Energy fuels.
13. Water.
14. Regional and local land-use planning.
15. Outdoor recreation.
16. Land grants to states.
17. Criteria for judging facts to determine what constitutes "maximum benefit for the general public."
18. Use and occupancy of public lands.
19. Fish and wildlife.
20. Intensive agriculture.
21. Outer Continental Shelf.
22. Organization, administration, and budgeting.
23. Impact of public ownership on local and regional economies.
24. Noneconomic aspects and implications of public land ownership in local and regional areas.
25. User fees and charges.

RAFT RIDE ON THE GREEN

13-mile stretch below Flaming Gorge Dam will give you thrill of a lifetime



FOR SHEER BEAUTY and excitement, try a raft ride down the Green River just below the Flaming Gorge reservoir and dam, in northeastern Utah.

Here's a jostling jaunt you'll never forget, a th[illegible] ride matched only by the primitive grandeur of the scenic wonderland through which the "Green" churns crystal clear en route to a distant rendezvous with the Colorado.

The Green flows dirty and silted into Flaming Gorge reservoir, deposits its sediment, then flows out clear as a crystal, creating a below-dam recreation strip that is attracting an increasing number of visitors each year. It is along this 13-mile stretch of the river that raft riders "shoot" the rapids as much for the pristine beauty as for the thrills.

The natives know pretty well how to get in and out of this attraction spot, but the cross-country tourist may need help.

First, go to Vernal, Utah, a town of some 6,000 people about halfway between Salt Lake City and Denver. Out of Vernal take Utah Highway 44 north some 40 to 50 miles to Dutch John, a little construction town at the Flaming Gorge Dam. From Dutch John,

Never a dull moment.

By GARY L. BLISS
BLM Realty Specialist, Vernal, Utah

Catching a rainbow trout is a bonus thrill.

take a gravel road eastward 5 or 6 miles to Little Hole, where the U.S. Forest Service has a campground.

Pushoff From Little Hole

A 7-mile stretch of the Green River from Little Hole downstream to Browns Park is administered on one side by the Bureau of Land Management and the Bureau of Reclamation; on the other side by the Forest Service. This rugged stretch is accessible in spots only by rubber raft. You can put your raft into the river at Little Hole and take it out at Browns Park. The trip takes about 5 hours, but it's a thriller.

Those wanting a longer trip can board a raft just below Flaming Gorge Dam and float 13 miles downstream to Browns Park.

The raft trip is one way. There's no going upstream by water or land. That's why, when you take off downstream in your raft, you better make arrangements to have someone pick you up by car at Browns Park. It's wise to stop at Dutch John and inquire about the road to Browns Park, because the route isn't too well marked. Also, it is a little circuitous, but an ordinary passenger car can make it.

When you push off from Little Hole, you find 7 miles of breathtaking scenery, also trout fishing which is hard to beat. From the river's edge, red sandstone canyon walls tower several hundred feet high, and majestic ponderosa pine trees are scattered along the riverfront. Gnarled juniper and pinon trees cling to the steep canyon walls. Between stretches of white and fast water, you may expect to find rainbow trout up to 3 pounds in deep clear pools. So, fishing is an added bonus for your raft trip down the Green.

BLM Plans Developments

The river is not too rough, or particularly hazardous, but water is fast enough to make the run thrilling.

The Bureau of Land Management is making plans for several float stop developments along the river. These developments will provide the river traveler with picnic tables, fireplaces, and sanitary facilities.

The Green River raft ride is purely a summer experience, to be taken between May 30 and September 30. Don't try it at other times of the year. You'll have to take your own rubber raft. Also, don't go on the river without a lifejacket. The water level varies, and partly submerged rocks and logs make canoeing extremely hazardous. All in all, the raft ride is not without its dangers, and those who take it should be skilled and equipped for emergencies.

Before the Flaming Gorge project was started, the area below the dam was visited only by an occasional cowboy or hardy backpacker. Now, many people enjoy the fishing, boating, and sightseeing. The number of visitors is expected to increase, and hundreds of people will make this scenic river journey in the future.

VICTORY AT VALE

A PROGRESS REPORT ON THE BIGGEST RANGELAND IMPROVEMENT PROGRAM IN THE ENTIRE WEST

IN SOUTHEASTERN OREGON, the Bureau of Land Management is demonstrating dramatically that land can be restored to its former usefulness, even though the grass resource had been depleted seriously. There in BLM's Vale district, on 4.6 million acres, the first large-scale attempt to solve widespread rangeland depletion is underway.

Achievements in less than 5 years have been substantial. Range surveys determined how much grazing can be provided. Brush has been controlled on 291,000 acres. Grass has been seeded on 178,270 acres. More than a thousand miles of fences have been built. Nearly 600 water developments have been completed. More accomplishments could be listed, but first, how did the Vale Project start?

Grass Once Stirrup High

Early ranchers could remember grass stirrup high, enough for the thousands of cattle and sheep that came to graze yearlong in the 1870's and 1880's. But as desirable forage decreased, the land was taken over by sagebrush. By 1934, when the Federal Grazing Service was established, the rangeland had little grass left. Soil was vulnerable to erosion; only brush, weeds, and annual grasses of little value remained.

Conservationists and ranchers wondered if it might be possible to restore the land to its former productivity. Careful livestock management was helpful, especially in areas where an adequate bunchgrass understory remained. But livestock management alone was a slow process in restoring seriously depleted areas.

Authorized by Congress in 1962, the Vale Proje[illegible] is the largest rangeland renewal program ever attempted in the West. Resource management and rehabilitation are the heart of the project. When it began, there was urgent need to increase forage for livestock and wildlife, particularly for early spring use. Also, there was the need to correct damage caused by soil erosion and to prevent further soil losses. The encroachment and spread of poisonous weeds and other noxious plants was a serious problem. There was a need to stabilize the livestock industry. Fire control and fire prevention, including replacement of hazardous cheat grass with low-hazard perennial grasses, were necessities. Many roads were needed and there were undeveloped opportunities for public recreation.

BLM Goes to Work

Once funds for the project were available, skilled and progressive BLM people in the Vale district got things underway. In addition to economic benefits to the region, here was an opportunity to demonstrate range-

By MAURICE HURD
BLM Range Conservationist, Vale, Oregon

land improvement for the whole world to see. Long [illegible]are of the problems that faced them, BLM people were eager to move. And move they did.

Range resource surveys were completed to determine the proper amount of grazing for the amount of available grass. The suitability of the land for other purposes—recreation, watersheds, mineral, wildlife—had to be analyzed.

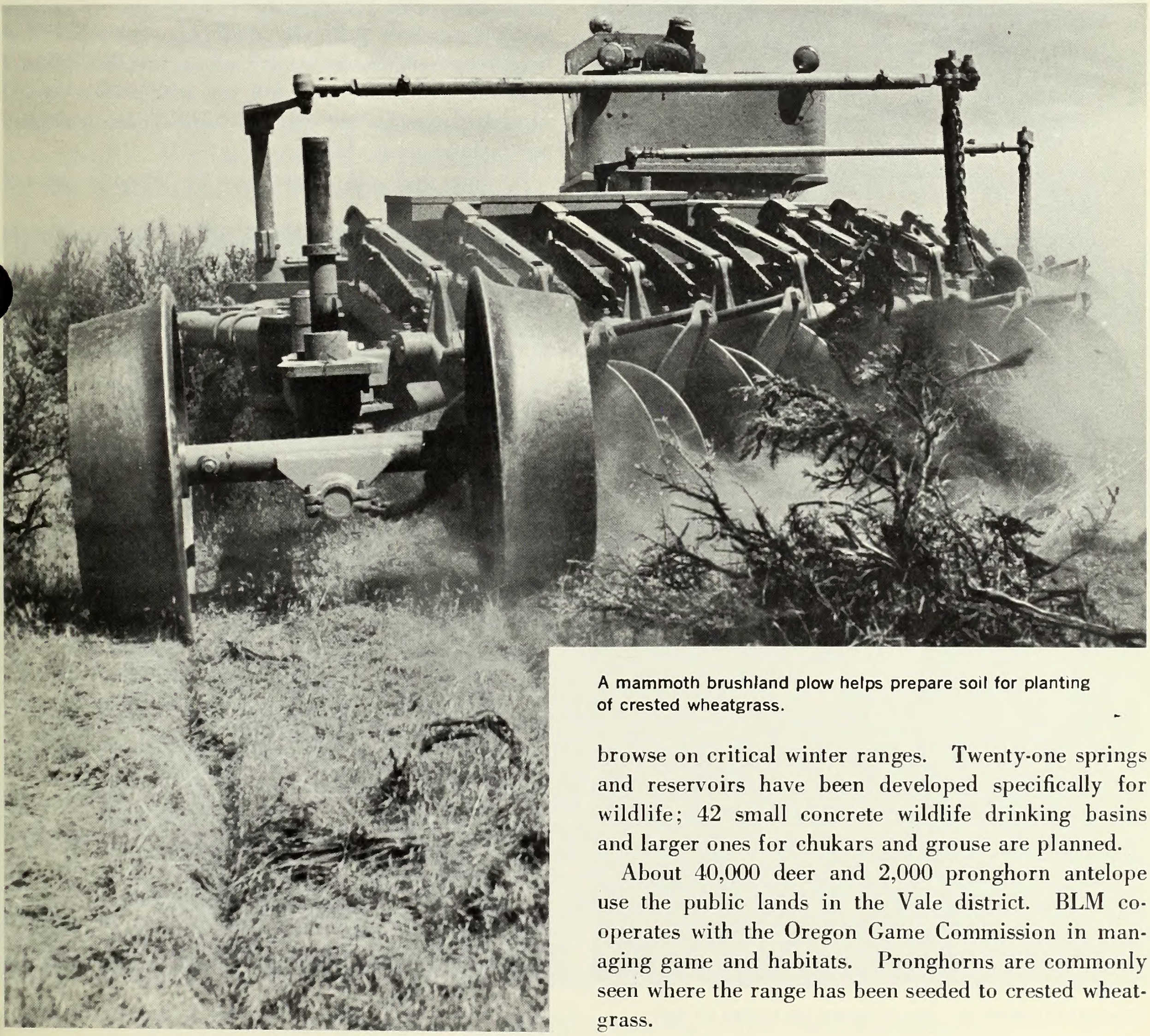
Already recreational use of public land in the Vale Project is on the increase. In nearby communities, the sale of groceries and gasoline to travelers has increased. Rockhounds push into remote areas for "thunder" eggs—Oregon's State rock. Sightseers and campers find quietness and majesty in steep-walled canyons where geologic forces have created scenes of wonder; they sniff the aroma of fragrant sagebrush after a spring rain, and squint at far horizons through smogless skies. Whitewater boat trips through the Owyhee breaks have been discovered by a few, and others come to gaze in wonder at the majestic scenery of the Owyhee River country.

Recreational Benefits

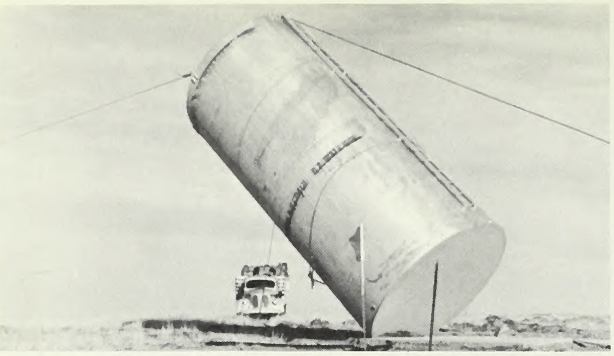
Multipurpose BLM roads serve recreationists and meet needs for fire control and resource management. Plans call for construction of picnic and camp facilities at 93 sites inventoried for public recreational development.

Since the Vale Project began, 26,400 acres have been seeded to nomad alfalfa for wildlife. An additional 2,300 acres have been planted to bitterbrush for deer browse on critical winter ranges. Twenty-one springs and reservoirs have been developed specifically for wildlife; 42 small concrete wildlife drinking basins and larger ones for chukars and grouse are planned.

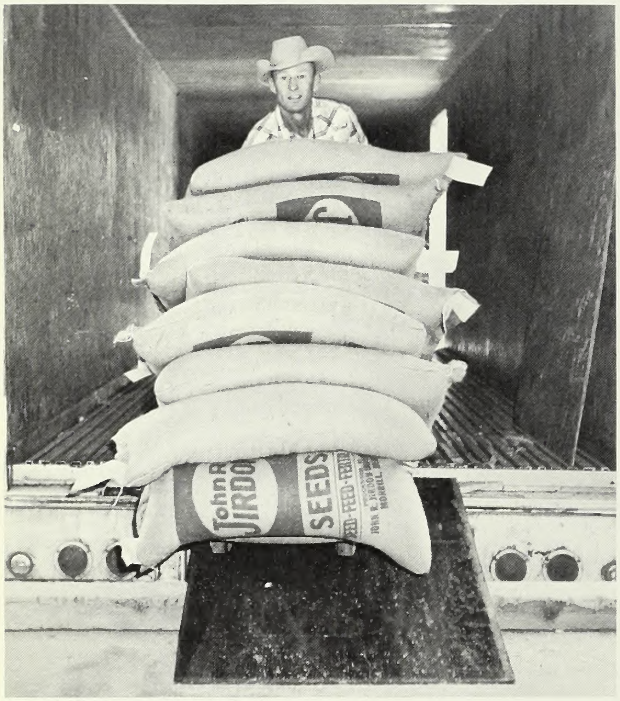
About 40,000 deer and 2,000 pronghorn antelope use the public lands in the Vale district. BLM cooperates with the Oregon Game Commission in managing game and habitats. Pronghorns are commonly seen where the range has been seeded to crested wheatgrass.



A mammoth brushland plow helps prepare soil for planting of crested wheatgrass.



Water pumped into this 18,000-gallon tank is fed through plastic pipelines to well-spaced watering troughs for livestock and wildlife.



Truckload of grass seed is unloaded for planting on prepared areas.

Plantings of bitterbrush have increased the browse for deer.

In areas where native perennial grasses are still present, they recover dramatically when released fr brush competition. Selective herbicides applied fr airplanes or helicopters are used to control the brush in that kind of situation. The job of helping native grass to recover on acreages equivalent to Rhode Island in size is now 37 percent complete.

Where little or no native grass remains on rangelands having potential, crested wheatgrass may be seeded. But first the brush must be controlled. Sometimes it is possible to plant grass seed through brush that has been controlled by spraying. In other cases, brush is controlled and a seedbed prepared by plowing with multiple-disc plows. Nearly 200,000 acres have been planted to crested wheatgrass, about half the total planned.

Plans call for treatment of about 20 percent of the rangeland, with the expectation that the remainder will recover with better livestock management. That becomes possible when crested wheatgrass seedings are available for spring and fall use with native forage in such a manner that vigor and growth are increased and maintained at a high level.

Seedings and spray areas must be fenced to prevent

This seeded crested wheatgrass means more and better forage.

grazing until grass plants are firmly rooted and growing gorously. Then those fences and others are used to manage livestock use systematically. To date, 1,158 miles of fence have been built; 2,100 more miles are planned.

Water Installations

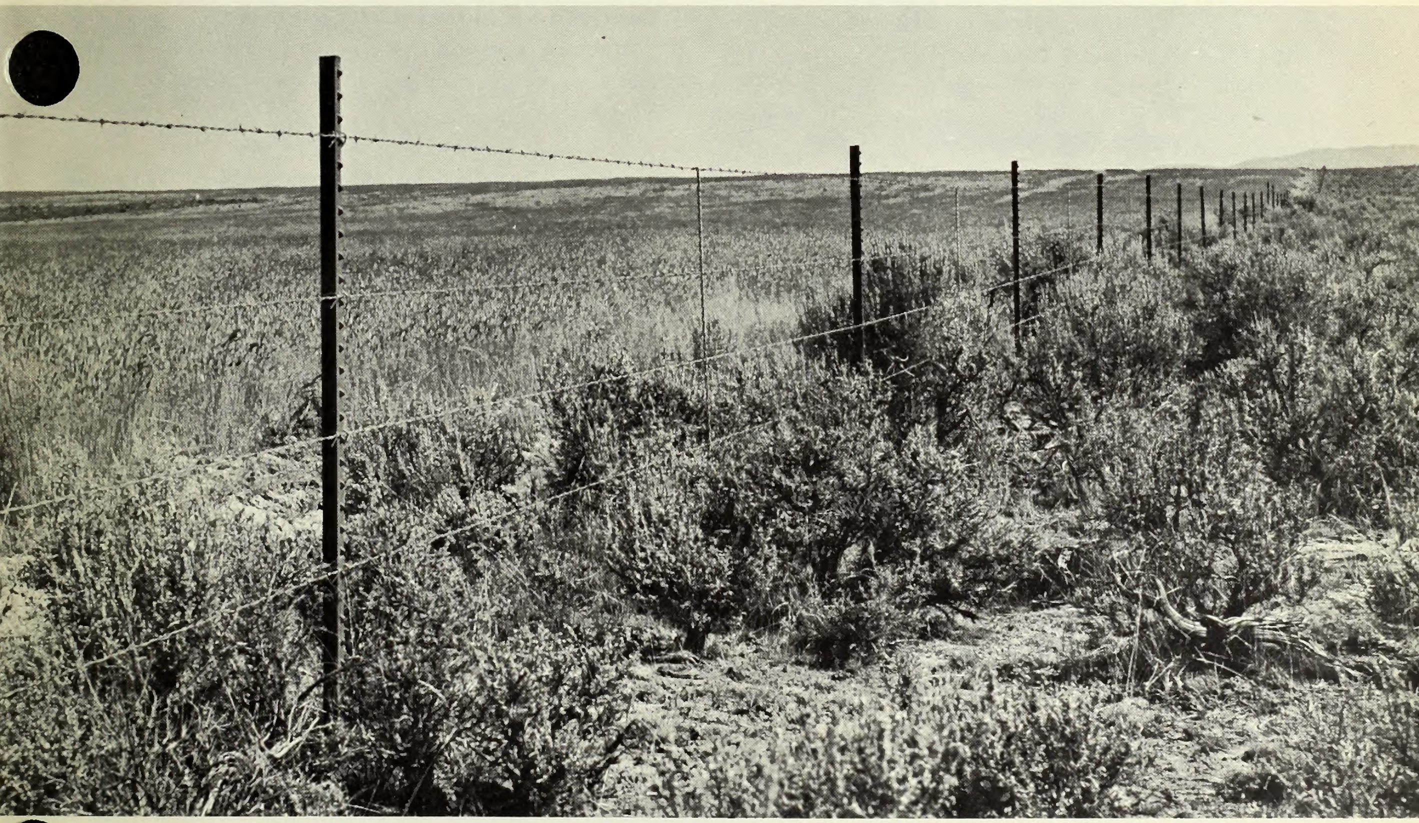
Water for livestock and wildlife is vital to uniform use of the range. A surprising number of springs can be developed in the dry Vale district where annual rainfall is only 10 inches. Surface runoff caught in reservoirs built for the purpose is a major source of water. To date 274 springs have been developed and 293 reservoirs constructed. Eighteen wells have been drilled. Water pumped into storage tanks flows to troughs through buried plastic pipelines. Water troughs are spaced about every mile so livestock and wildlife can get water and forage without traveling very far. Enough plastic pipeline to connect New York and Washington, D.C., has been used to supply 217 water troughs.

The Vale Project is a proving ground for rangeland rehabilitation. Full significance is yet undetermined, but what is learned at Vale may affect the concept of management on all public land in the West. Private and public range managers come from far and wide to see what is being done. Bankers and boaters, agricultural engineers and fishermen, economists and housewives, conservationists with many interests, all have come to see the Vale Project. They want to know how benefits have been brought about.

One of the first tangible benefits to range users came at Jordan Valley, where District Manager Maxwell T. Lieurance told ranchers that additional grazing privileges were being granted, made possible by range rehabilitation and intensive management. More than 3,000 cow-months of forage were granted in addition to those already licensed in the Soldier Creek management unit.

"I never thought it could happen," said one rancher. He previously had voluntarily reduced his herd to allow the range to recover.

Seeing is believing, and people are observing dramatic changes in the public range of the Vale district. The Vale Project made possible the planned resource rehabilitation and use, as well as the tangible cooperation, which are vital to this new approach in rangeland management.



mproved range (beyond fence) and uncontrolled brush (at right) provide interesting contrast on the Vale project scene.

LAND LAUNDRY

ARIZONA'S "OPERATION CLEANUP" MAY BECOME MODEL FOR THE WEST

IF CLEANLINESS is next to godliness, as the old proverb says, a lot of folks in Arizona can be pardoned for feeling an angelic glow.

In more earthy vernacular, the Bureau of Land Management's vigorous "Operation Cleanup" campaign in the State is a huge success.

And because BLM administers a pretty sizable chunk of real estate in Arizona—13 million acres—cleanliness on the public domain is a long way toward cleanliness statewide.

The most significant thing about the program's success is that the public has finally realized the importance of a clean outdoors.

BLM started the program in the Arizona Strip country, located just north of the Grand Canyon, 3 years ago. It has resulted in a 60- to 90-percent cut in dirty camps. This is truly a significant reduction, and BLM deserves a pat on the back for its efforts.

Hunters, weekend campers, and others who go into the area should also be given recognition for thei efforts.

Few Act Like Pigs

All too often a few people in the outdoors tend to act like pigs and leave their camps strewn with garbage and trash. I'm sure they don't do it at home (maybe some of them do). If they do, someone has to pick it up. The same goes for campers. If they don't pick it up, somebody else has to. And nobody likes to cleanup after someone else.

Realizing all these problems, BLM erects welcome stations on key access roads into the Strip. Day and night during the opening of the fall deer hunting season representatives at the stations pass out plastic litterbags, "Operation Cleanup" literature and a map of the Strip country.

The Bureau places litter barrels at strategic points throughout the Strip so visitors will find it convenient to dispose of their litter-loaded bags.

The main point the Bureau is trying to instill in people passing through the welcome stations, is to leave a

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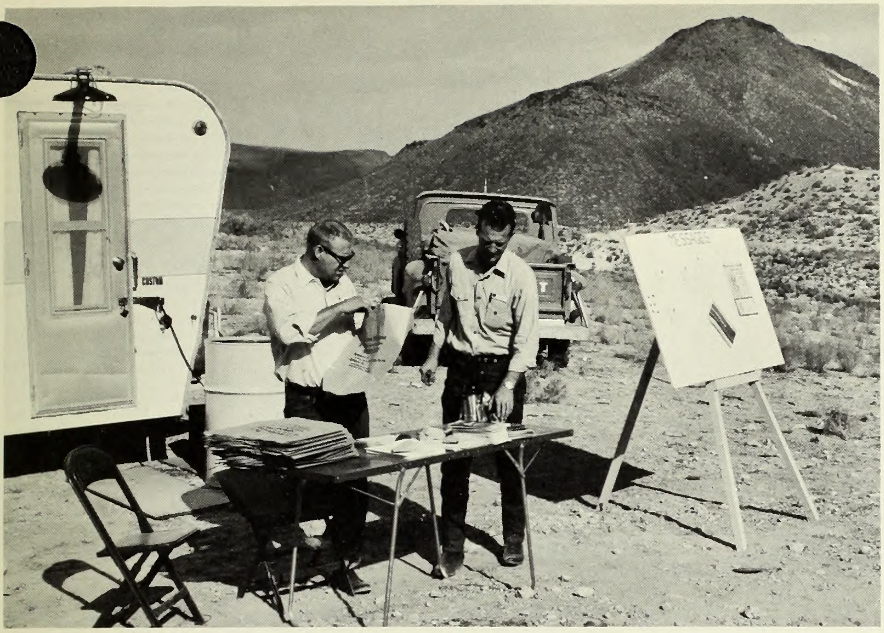
By DeWAYNE SMITH

Outdoor Editor, The Phoenix Gazette
(From a recent issue of The Gazette)



At roadside stations, BLM gives hunters helpful information, solicits cooperation in keeping the public land clean.

camp cleaner than they found it. This means to cleanup litter other than your own. If everyone did that, the problem would be solved.

It's a good gesture to cleanup the surrounding area adjacent to your own campsite. At least you know you did your part, even if the fellow before you didn't.

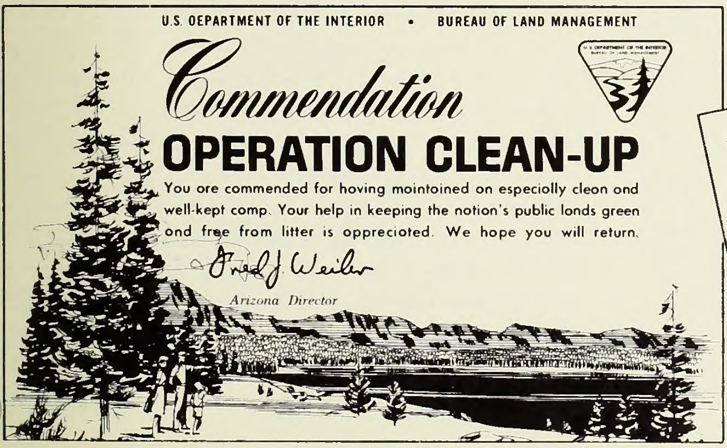
Message Service Given

As a bonus, the Bureau has installed message boards at each station to serve visitors. Often two hunting parties will agree to meet at a certain place. All a person has to do is leave a note and the group following will be able to find them easily.

When BLM officials check the different campsites and find them clean, the campers are presented a "Clean Camp Commendation Certificate." For the ones found dirty, the campers are given a slip of paper requesting their help in the cleanup campaign.

"Operation Cleanup" now is a statewide BLM program that continues throughout the year. The continuing phase includes distribution of litterbags, maintenance of trash barrels, and presentation of clean camp commendation certificates to campers and other visitors using the 13 million acres of public lands in Arizona. Next year "Operation Cleanup" may be a bureauwide antilitter program involving 10 Western States and Alaska.

With all the antilitter publicity and campaigns being held, it is refreshing to find at least one place where the public is taking it to heart and going all out.



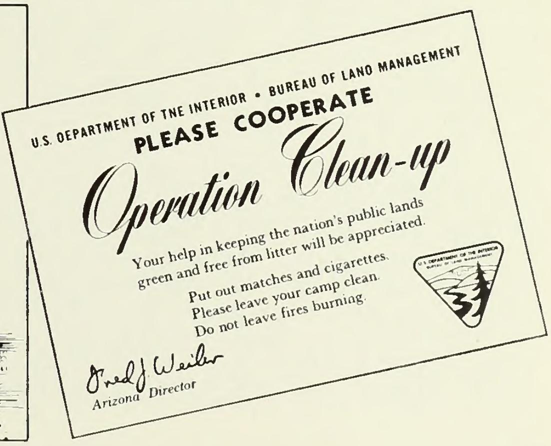
U.S. DEPARTMENT OF THE INTERIOR • BUREAU OF LAND MANAGEMENT

Commendation

OPERATION CLEAN-UP

You are commended for having maintained an especially clean and well-kept camp. Your help in keeping the nation's public lands green and free from litter is appreciated. We hope you will return.

Fred J Weiler
Arizona Director



U.S. DEPARTMENT OF THE INTERIOR • BUREAU OF LAND MANAGEMENT

PLEASE COOPERATE

Operation Clean-up

Your help in keeping the nation's public lands green and free from litter will be appreciated.

Put out matches and cigarettes.
Please leave your camp clean.
Do not leave fires burning.

Fred J Weiler
Arizona Director

GIANT'S BIRTHDAY

Alaska Throbbing With Hospitality Throughout Centennial Purchase Year

You've been thinking about a trip to Alaska.

Well, this is the year.

It's Alaska's Centennial—the 100th anniversary of its purchase by the United States from Russia—and the whole State is throbbing with hospitality.

Alaska's latchstring of genuine welcome is out everywhere in the Great Land—in every city, town, and village—at every crossroad. This is the year to enjoy Aslaska, see its breathtaking vistas, look into its lusty past, and experience the true feel of our last frontier.

Alaska' historical fabric has been spun by people of many nations. Its designers include Russia's Peter the Great, the Danish explorer Vietus Bering, the British captain James Cook, the stampeders who followed the "Trail of '98," and the present residents.

The fabric has glittering threads from the gold, sequins from the silvery salmon, and the frosty film of Ice Age remnants.

Able historians have recorded the centuries of Alaska's pulsing changes. Writers such as Bancroft, Service, Nichols, Andrews, Hulley, Gruening, Rogers, and others span the literary decade before and after the purchase of "Walrussia," through 100 years of territorialism, to the present stature of the 49th State. Their volumes contain legends of Eskimos, tales of the Aleuts, of the days of the "Big Pan-Out," and the climatic era of World War II.

Alaska has been called by many names—Seward's Folly, Little Siberia, the Great Land, Land of the Midnight Sun, the 49th State, the Last Frontier, the Foremost Frontier, and the Hard Land.

But Alaska still is largely unknown. In many way we know more about the surface of the moon than w know about some of the remote areas within the 49th State. Much of the land is only now being mapped and explored.

Popular misconceptions abound. Most people still think of Alaska as a vast wilderness covered with snow and glaciers. It does have world-famous glaciers, but they cover only 3 percent of the Great Land. It also has luxuriant rain forests of hemlock and Sitka spruce; in the lower part of the panhandle (southeastern Alaska) rain and mist add up to 180 inches a year.

At the other extreme, in the Arctic deserts of the Far North, annual rainfall and snow seldom exceed 3 inches a year. Alaska is made up of extremes and contrasts. Perhaps this accounts in part for the many popular misconceptions. Perhaps, too, the barroom ballads of Robert Service and the strange tales told by Jack London have helped confuse fact with fancy.

Parts of Alaska are as modern as tomorrow. In Anchorage, for example, commuters fighting the traffic snarl are aided by radio broadcasts from helicopters. Still the Cheeckako (native word for a newcomer—one who has just arrived) often expects to find everyone traveling by dogsled, living in ice igloos, and eating whale blubber.

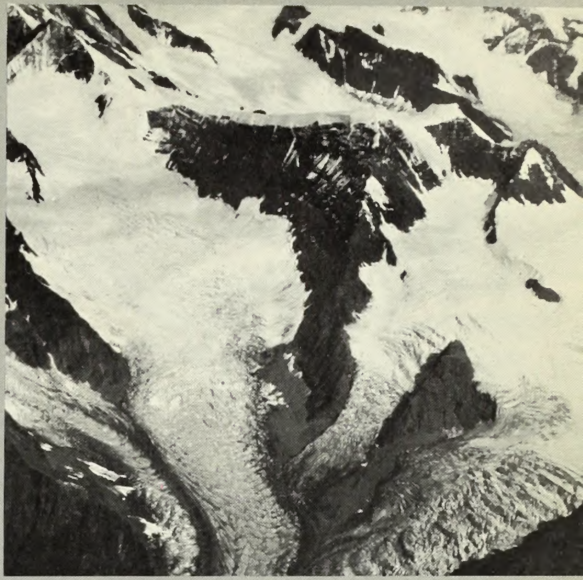
Where To Write for Information About Alaska's Centennial

Herbert Adams,
Executive Director,
Alaska Centennial
Commission,
Box 1967,
Juneau, Alaska 99801.

James A. Johnson,
President,
Alaska Travel Promotion
Association,
117 Terminal Building,
Boeing Field,
Seattle, Wash. 98108.

Director,
Alaska Travel Division,
State of Alaska,
Box 2391,
Juneau, Alaska.

Larry Carpenter,
Director of Public Relations,
Alaska 67,
Post Office Box 1967,
Fairbanks, Alaska 99701.



How much do you know about Alaska

TAKE THE SOURDOUGH QUIZ BELOW

This year, 1967, is the 100th anniversary of the purchase of Alaska by the United States from Russia.

How much do you know about Alaska, sometimes called Seward's Folly, the Great Land, Land of the Midnight Sun, the 49th State, the Last Frontier?

You can have fun, as well as learn much, by taking the "Sourdough Quiz" below. Then turn to page 21 and check your answers. If you answer more than half the questions correctly, you qualify as an honorary Sourdough.

True or False

1. Only 3 percent of Alaska is covered with glaciers. __________

2. The farther north you go the colder it gets, thus most of the glaciers are in the north end of the State. __________

3. Alaska's most valuable natural resource (in terms of current income yielded) is timber. __________

4. Her most commercially important mineral resource is gold. __________

5. Her second most commercially important mineral resource is sand and gravel. __________

6. In interior Alaska, most of the forest and tundra fires are caused by dry lightning. __________

7. In recent years the native population (Eskimo, Aleut, and Indian) has slowly decreased. __________

8. Ice frequently bridges the sea between Alaska and Russia so that an Eskimo could cross over on a dogsled. __________

9. The reindeer is native to Alaska. __________

10. Temperatures north of the Arctic Circle often exceed 100°. __________

11. Population is made up mostly of oldtimers, homesteaders, and retired miners. __________

12. Both male and female reindeer have antlers. __________

True or False

13. The Klondike is in eastern Alaska. __________

14. During the Arctic winter, total darkness settles over the land for about 3 months. __________

15. Land in Alaska is free to qualified homesteaders. __________

16. Water pollution and sewage disposal are seldom serious problems for Alaskan cities. __________

17. Most of Alaska lies in the zone of continuous permafrost. __________

Best Answer

18. The best fur for trimming the hood of an Eskimo parka is (sea otter, bear, caribou, wolverine). __________

19. Counting only freshwater lakes larger than 20 acres in size, Alaska has an estimated total of (1,000; 10,000; 500,000; 3 million). __________

20. Total length of the State's coastline is (10,000; 21,000; 33,000) miles. __________

21. The man who discovered Alaska in 1741 was . . . __________

22. Total population of Alaska is roughly equivalent to that of (Denver, Oakland, Wichita). __________

23. Average age of the population is . . . __________

24. Public lands still in Federal ownership make up (10, 25, 75, 95 percent) of Alaska's total area. __________

25. In the following pairs of locations, select the one you think is nearer Anchorage, Alaska:
Attu Island or Seattle __________
The North Pole or Boise __________
Honolulu or Milwaukee __________
Tokyo or Atlanta __________
Peking or Copenhagen __________
Havana or Stockholm __________

Answer to Quiz on page 21.

SILT and

SALMON

BY ROBERT L. BOROVICKA
Portland, Oregon
BLM Fishery Biologist

Problem of fish-killing mud in Pacific Northwest streams being tackled by conservationists

THE SPECTACULAR population growth and industrial expansion in States bordering the North Pacific Ocean have caused a variety of problems for salmon and steelhead, the most publicized being blockages at dams, overfishing, water diversion, and pollution.

A more subtle problem, however, is unusual silt and waterborne sediments that impact spawning gravels of the salmon and trout streams. Fishery scientists discovered the effect of silt while studying the early life history of eggs and fry in the gravel and in the stream environment. Excessive silt can threaten the future abundance of anadromous fish in some watersheds.

Anadromous is a word applied to many migratory species of fish, but on the West Coast we generally think of Pacific salmon, steelhead, and some trout. Their life history is almost common knowledge to residents of the Pacific Coast, but the unique pattern is worth repeating for general knowledge of this problem. The adult fish migrate from the open sea and estuaries to the fresh water streams where they were hatched and reared. At the correct time for each species, the female selects a gravel area in a stream to build a nest for the several thousand eggs she is holding in her body cavity. The nest is a depression in the gravel that the female has dug with her body and the help of water current.

Eggs Covered With Gravel

The eggs are deposited in the nest and immediately fertilized by the male. The female then moves upstream and covers the eggs with gravel to form a protective barrier from surface water and predators. The nests vary from 4 to 20 inches in depth below the normal streambed. When the spawning act is completed, all Pacific salmon die.

Within 1 to several months, the eggs hatch. The young fry, while absorbing the yolk sac of the egg, work out of the gravel in the spaces between the small rocks and enter the open stream environment. Depending on the species, the fry rear in the stream for a period of just a few days to 1 or 2 years. Juvenile fish, at the appointed time, migrate to salt water where growth is speeded by feeding on the abundant aquatic organisms in the estuaries and open ocean. The adult fish, when sexually mature and weighing from 5 to 50 pounds or more, start the return trip to fresh water and repeat the age-old cycle.

Salmon and steelhead have several critical periods in their lifespan, but probably none more important than the time the eggs and young fry are completely at the mercy of factors that might affect their fresh water environment. Abundant fresh, clean water containing high amounts of oxygen is needed during the hatching period.

Research Seeks Answers

Research is being conducted by many universities and State and Federal agencies to determine the impact of land and water uses on the stream life of the eggs and young fish. Already it has been found that fine material in the gravel is extremely detrimental to the eggs and fry. When eggs become coated with silt, they cannot make good contact with oxygen-containing water, resulting in suffocation. Research in California, Oregon, and Canada has recorded heavy losses of eggs from unusual siltation in spawning nests. Even under controlled conditions, severe egg losses sometimes occur when waters supplying the hatchery become turbid and silt settles on eggs in troughs and baskets.

There are other direct effects of silt on fry and fingerling. If turbid waters persist after eggs are in the gravel, it is very likely that the fine material will fill small spaces between the gravel. Fresh water high in oxygen content is then prevented from flowing to the egg-sac fry located below the surface of the gravel. The fry can be trapped and starved in the nest when escape routes in the spaces between larger gravel are cemented by sediment.

Salmon and trout fry and fingerling from muddy

A mixture of seed, fertilizer and cellulose mulch is sprayed along a new road cut to help prevent erosion and siltation of streams.

The female Pacific salmon builds her nest and deposits eggs in the gravel of streams. Gravel and water should be clean and free of silt for best survival of the eggs and fry. (Oregon Game Commission photo)

streams have died after rupture of the gill filaments. Fish instinctively avoid silt and attempt to leave waters where it is heavy. There is abundant evidence backed by research that turbidity and siltation cause a lack of small plant organisms that are a major contributor to food resources in streams and lakes. Adult fish seeking spawning grounds may reject former good gravel areas that have become cemented with sand and sediment.

A direct result is the loss of many hours of sport fishing due to bad water. Studies conducted by the Oregon Game Commission indicate fishermen simply quit fishing when streams are muddy.

Activities that cause heavy silting of even one small tributary may seriously affect the main river, stopping sport fishing by several hundred anglers. Clouded water also has an immediate harmful effect on resorts and guides that depend on sport fishing for their livelihood. Proper sport harvest of the fishery resource may be prevented if the bulk of the migrating fish are moving through prime fishing grounds while muddy wat prevents angling.

Some muddy water is to be expected during peri of extremely high runoff, but the harmful effect is diluted by the quantity of water. Silt entering streams during low or normal flows may be particularly harmful because of the reduced ability of the water to carry off the pollution during such low velocity flow.

Silt Causes Cited

High turbidity and silt in water may come from many natural sources such as landslides or unusually heavy rains. Man adds silt to water by poor practices in logging, rock and mineral mining, road construction, suburban development, farming, grazing, or any activity that disturbs the soil and vegetation. Where the soil is subject to accelerated erosion, the problem is compounded.

What is being done by the Bureau of Land Management to alleviate the situation in important salmon and trout streams? There now appears to be general awareness of the problem by persons engaged in activities that disturb the land. Fishery managers and watershed specialists are being consulted in advance to suggest protective measures. Watersheds are being protected by maintaining adequate vegetative cover through proper distribution and numbers of grazi animals. Programs of intensive watershed rehabilitation and protection have been completed on severely abused lands, but the work must be expanded into additional drainages.

Instructions are placed in timber sale contracts requiring loggers to exercise extreme care while cutting in watersheds containing streams important for spawning and rearing salmon and steelhead. New logging methods providing a minimum of soil disturbance help to distribute water runoff. Timbered corridors and undisturbed vegetation are preserved along streams to help reduce silt and hold streamside cover.

More attention is being given to building roads high on the watershed rather than at streambed level to provide minimum disturbance to the stream. Roadbeds and culverts are being designed to reduce or hold immediate runoff of turbid water. Cuts and fills are being seeded with grasses to provide immediate cover and prevent erosion.

The application of protective measures in the normal use of timber, forage, land, and minerals is a start in multiple-use management. Now there is a need to apply specific practices and to change individual concepts before we can approach intensive multiple-use of resources.

Tu-Tu Returns to the Kenai

Transplant by air and truck puts caribou back where they once thrived

Tu-Tu is back on the Kenai Peninsula after half a century. Tu-Tu is the Eskimo name for caribou, a distinctive member of the deer family which roams the Arctic tundra in immense herds.

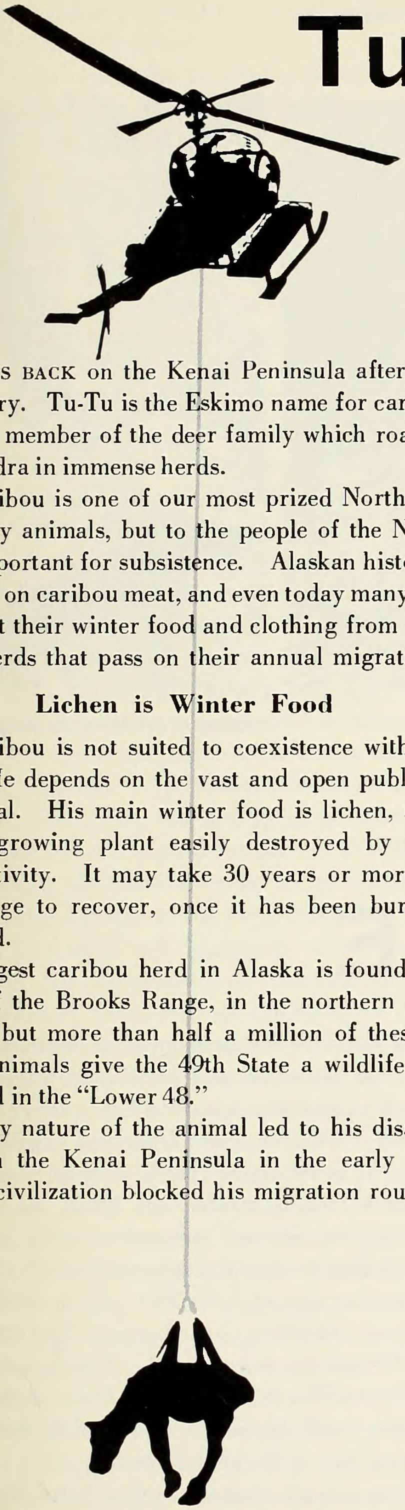
The caribou is one of our most prized North American trophy animals, but to the people of the North it is most important for subsistence. Alaskan history has been made on caribou meat, and even today many Arctic villages get their winter food and clothing from mighty caribou herds that pass on their annual migration.

Lichen is Winter Food

The caribou is not suited to coexistence with civili[illegible]tion. He depends on the vast and open public land [illegible] survival. His main winter food is lichen, a small and slow-growing plant easily destroyed by fire or human activity. It may take 30 years or more for a lichen range to recover, once it has been burned or overgrazed.

The largest caribou herd in Alaska is found in the vicinity of the Brooks Range, in the northern part of the State, but more than half a million of these well-antlered animals give the 49th State a wildlife legacy unequalled in the "Lower 48."

The very nature of the animal led to his disappearance from the Kenai Peninsula in the early 1900's. Invading civilization blocked his migration routes and increased hunting pressure, and wildfires destroyed the lichens on winter ranges. Now part of the former range is within the Kenai National Moose Range, administered by the Bureau of Sport Fisheries and Wildlife. In recent years game biologists have felt that it might be possible to reestablish a small caribou herd on the Peninsula.



After this undignified start, the caribou will ride on a straw bed in a DC–3 airplane for the longer part of his [illegible]urney.

Transported by Air

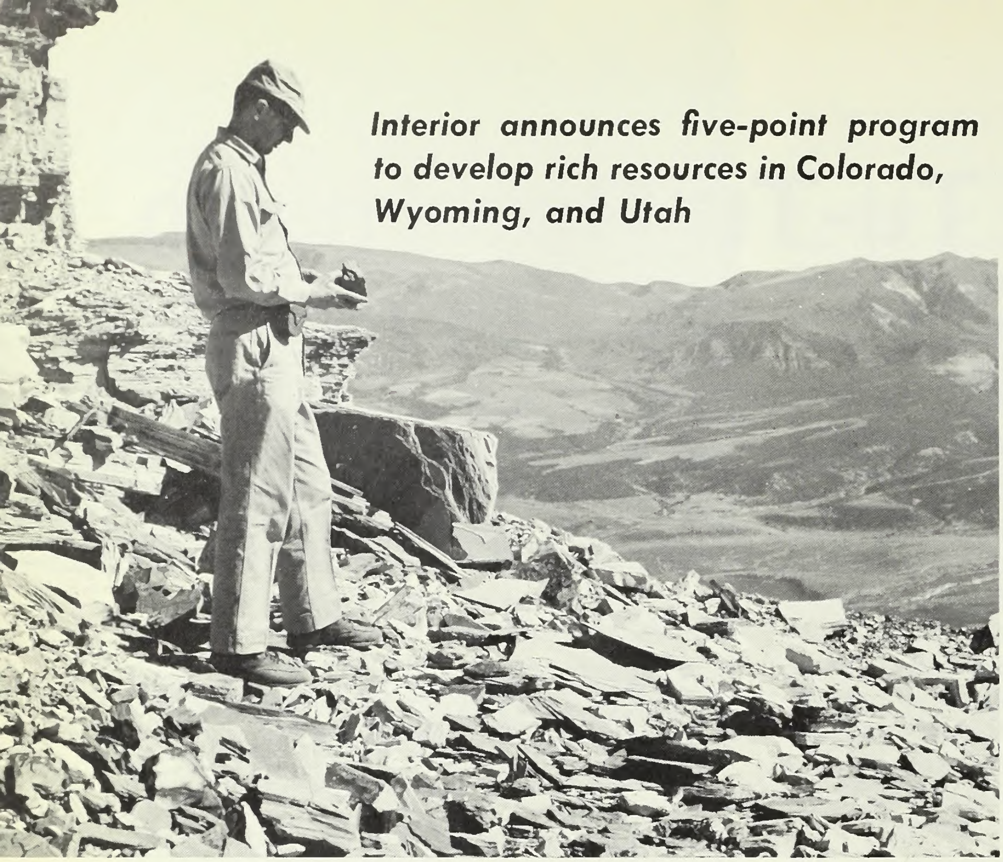
In 1964 and 1965 employees of the Alaska Department of Fish and Game captured 44 caribou from the Nelchina herd as the animals crossed the frozen Copper River near Chistochina. By helicopter, truck, and airplane, the caribou were moved successfully 250 miles west to their new home on the Kenai.

Hopefully, Tu-Tu will once again be a part of the fauna of the Kenai Peninsula, filling a wildlife gap created by man 50 years ago.

By JIM EVANS
BLM Wildlife Specialist, Anchorage, Alaska

Calmed by a tranquilizer, the young caribou is made ready for transport to Kenai Peninsula, there to find a new life among natural surroundings.

Interior announces five-point program to develop rich resources in Colorado, Wyoming, and Utah



Oil-laden bits of shale are examined at an outcropping atop Mt. Logan overlooking the Colorado River Valley.

Closeup of section of oil shale formation.

OIL SHALE PLAN

A FIVE-POINT PROGRAM to promote economic recovery of shale oil and associated minerals from the rich oil shale resources of the Green River formation in Colorado, Wyoming, and Utah was announced January 27. It is estimated that known oil shales of the area contain the equivalent of about 70 times the present domestic proved reserves of crude petroleum.

Steps leading to the program announced by Secretary of the Interior Stewart L. Udall began in 1964 with the appointment of a distinguished group of private citizens to the Oil Shale Advisory Board. The Board's interim report presented in February 1965 has been the subject of intensive and detailed review within the Interior Department during the past 2 years.

Mounting energy demands in the United States make it increasingly important to develop oil shale to the point where it can begin to make a contribution to meeting U.S. energy needs.

Points Enumerated

Secretary Udall explained that the five-point program will involve the following:

1. Action to clear title to public oil shale bearing lands of the three-State area. This involves withdrawal of oil shale lands from all mineral entry other than for oil and gas leases, initiation of examinations and contests to remove clouds on title arising from oil shale and other mineral claims, and restoration of sodium to withdrawn status except where the Secretary specifically finds that particular sodium deposits can be extracted without damage to the oil shale resource. Pending sodium preference right lease applications will be promptly considered on their merits.

2. A "blocking-up program" in which Secretary Udall will give consideration to applications from private owners of scattered oil shale lands to exchange part of them for Federal lands of similar quality as to mineral and other physical characteristics. These exchanges would permit some consolidation of private holdings which are too scattered for efficient mining operations. Under this program the Secretary will consider applications for blocking only where the applicant agrees to a time schedule and investment commitments for the development of economic mining and recovery operations. Applicants will also be required to agree to develop the blocked up lands in accordance with the best conservation principles, both with regard to maximizing the mineral values to be recovered and to minimizing damage to the environment.

3. The Secretary will announce procedures which will permit the Department to consider applications from individual firms and combinations of firms for provisional developmental leases of oil shale lands. It is contemplated that the Department will contract with interested parties for a variety of approaches to the development of economic processes for the recovery of oil and associated minerals from shale. Applications for contracts would describe the process sought to be developed, a commitment of research and development expenditures, a time schedule within which these expenditures would be made, and the approximate volume and location of oil shale and associated minerals required to support operation of a commercial plant if the research and development project is successful. Parties to such contracts will be permitted access to the necessary acreage of oil shale lands for testing purposes, but leases for larger tracts for commercial development will not be issued until the research and development contract has been successfully performed. Leases will contain firm assurances that a commercial scale plant will be constructed, and that good conservation practices will be observed.

4. Through cooperative efforts, ways to retort the oil from the shale in the ground will be sought. Underground atomic explosions will be researched as a means of fracturing deep deposits of shale, and making possible the retorting of the shale without ever bringing it to the surface. Such a program, if found technically and commercially feasible, would go far toward solving the difficult problems of protecting the landscape of the Green River formation area from the scars of traditional mining and processing of minerals. The organic matter (kerogen) present in the rock formation known as oil shale is a solid that is converted to a liquid by heating. The concept of underground retorting is that the shale first should be broken into small pieces by a massive explosion. Thereafter heat would be applied to the broken shale, and the liquid oil pumped to the surface. In these efforts, the cooperation of the Atomic Energy Commission and private capital will be enlisted.

5. Finally, the Department will request funds for a broad program of research and investigation by the Geological Survey, Bureau of Mines, and Bureau of Land Management. Some of these research projects will involve close cooperation and joint participation with other Federal agencies, industry and public and private research facilities. Objectives of this part of the program will include the development of more information on the location, characteristics, and values of the oil shale and other mineral resources of the Green River formation, and of better technology for resource development consistent with sound principles of conservation and environmental control.

Public Must Be Protected

"A major concern in developing the oil shale program," the Secretary said, "has been to enunciate policies and procedures that will protect the public interest fully, and at the same time will offer reasonable incentives to private capital to participate in an accelerated research and development program."

Secretary Udall says the public interest requires that in efforts to develop the technology of extracting oil from shale, the Department must write into every rule, regulation, contract, and permit affecting the public lands those terms and conditions that will:

1. Encourage competition in development and use of oil shale and related mineral resources;
2. Prevent speculation and windfall profits;
3. Promote mining operation and production practices that are consistent with good conservation management of overall resources in the region;

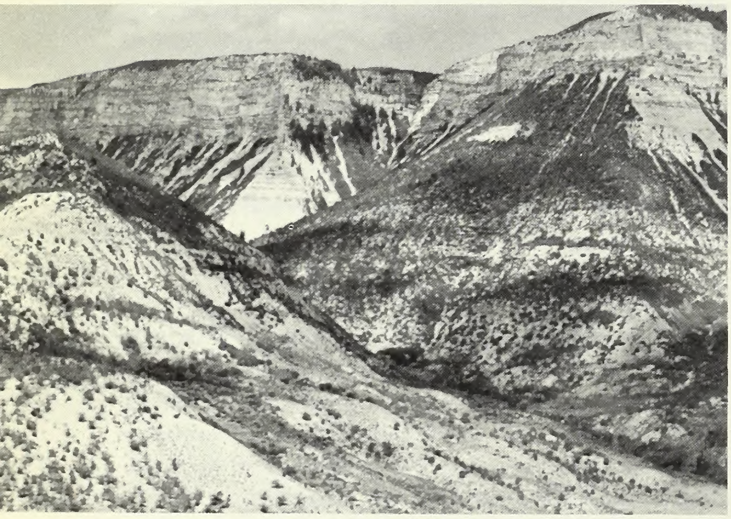
4. Encourage fullest use of all known mineral resources;
5. Provide reasonable revenues to the Federal and State governments.

"We intend," the Secretary said, "to seek the broadest possible participation in the development of our oil shale resources. The public lands in the region, representing the largest untapped source of hydrocarbon energy known to the world, belong to all the people and must be used for the benefit of all the people."

Contract Emphasis

The Secretary emphasized that the contracts involved in point 3 of the oil shale program will involve two distinct phases. The first phase, in which the contractor expends research and development funds, will require only small acreages of public lands necessary for research and development operations. The second phase, reached only when the research and development work has proved successful, will require acreages large enough to assure an adequate supply of oil shale and other minerals for a commercial operation of specified capacity over an agreed term of years.

Federal holdings of oil shale lands total about 7 million acres, mostly lands administered by the Bureau of Land Management, but the holdings vary widely as to richness and thickness of shale.



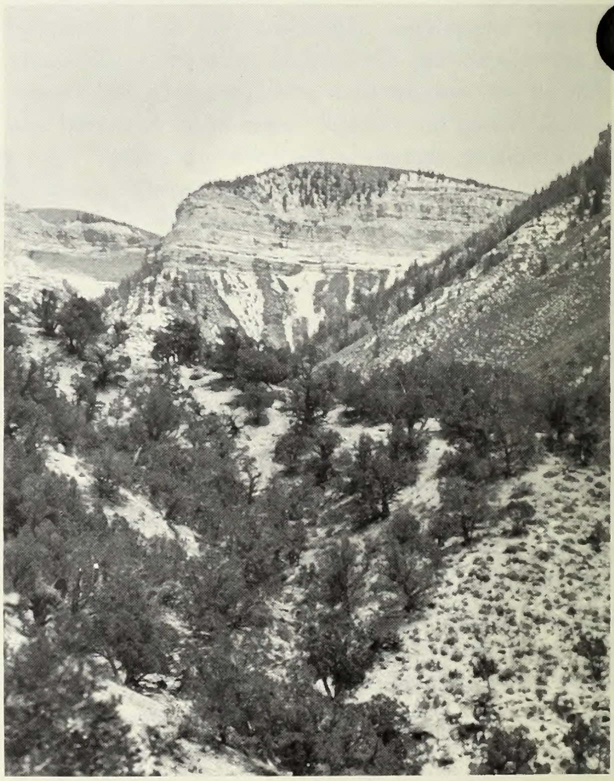
Outcropping of oil shale deposits near Rifle, Colo.

"I do not underestimate the difficulties that will attend all five parts of our program," the Secretary said. "For at least 50 years legal, economic, and technical difficulties have stood in the way of efforts to develop the Nation's oil shale resource. To bring this program to fruition may take more than a decade, but if we are to realize the potential of our vast oil shale resources we must undertake intensive efforts now."

Although oil shale deposits are found in seve States, the richest deposits are found in the Green River formation of Colorado, Utah, and Wyoming. It is in this area where the Department anticipates the greatest interest under point 3 of its program.

The amount of oil that can be recovered will depend upon technology and economics. The Green River deposits extend over about 16,000 square miles and include several geologic basins. The total thickness ranges from a few hundred feet to more than 2,000 feet and the potential oil yield ranges from a few gallons to more than 65 gallons per ton of shale. The Federal Government has title to about 72 percent of the total oil shale acreage with potential yield of at least 15 gallons per ton; this amounts to about 79 prcent of the estimated equivalent oil in place. Some of this acreage, however, is the subject of mining claims not yet adjudicated. The remaining acreage is owned by the States or private individuals or companies.

The Bureau of Land Management immediately submitted application for a withdrawal order, and the Department began other steps to clear title to the Federal oil shale lands.



A closer look at oil shale country in the Cottonwood Gulch area of Colorado.

ANSWERS TO SOURDOUGH QUIZ

(From page 13.)

1. True. Glaciers cover only 20,000 acres, or about 3 percent of the area. Largest glacier in America is the Malaspina. It is about the size of Rhode Island, with an ice front that extends nearly 50 miles along the Gulf of Alaska.

2. False. The Arctic region is warmed by heat from the ocean radiated through floating ice. Much of interior Alaska gets colder than Point Barrow. Glaciers form only in relatively warm climates with high mountains and heavy precipitation, hence most of them are in the southern part.

3. False. Income from the fishing industry is about twice that from timber. Timber ranks second.

4. False. It is now petroleum (oil and gas), which makes up half of the State's mineral production.

5. True. Recent annual output was $23 million, stimulated somewhat by the 1964 earthquake.

6. True. Frequent thunderstorms in the hot, dry interior forests are the main cause of fires. Fighting these fires is the job of the Bureau of Land Management smoke-jumpers who are trained each year in Fairbanks.

7. False. Since 1910 native population has been increasing. In 1960, the rate of annual increase was 3.8 percent, one of the fastest rates in the world. Comparable rate for the United States as a whole was 1.4 percent in 1960.

8. True. At the nearest point Russia is less than 3 miles from Alaska, and ice often makes a solid bridge between the two neighboring areas. Before the cold war, Eskimos occasionally crossed over the ice by dogsled to visit relatives in Siberia.

9. False. The reindeer is native to Siberia and was introduced into Alaska about the turn of the century to provide food for hungry Eskimos whose supply of whales had been critically cut back by outside whaling industries.

10. True. Temperatures in the Land of the Midnight Sun frequently exceed 100° north of the Arctic Circle. High temperatures, dry fuels, and travel problems make firefighting extremely difficult in interior Alaska.

11. False. In the days of the gold rush, the population was made up mostly of men and oldtimers. Now women and children have changed the picture completely.

12. True. Both male and female reindeer have antlers, but those of the male are slightly larger.

13. False. The gold-famous Klondike is in Yukon Territory, Canada.

14. False. The Arctic is never in total darkness, even though the sun may be below the horizon most of the winter. Bright moonlight on the snow and refracted sunlight brighten the bleak landscape. The number of hours yearly during which print can e read out-of-doors is as great in the Arctic as in the tropics.

15. False. There is still limited homesteading in Alaska, but homestead land is not free—and never has been. Homesteading in Alaska is not easy. Only a third of all the people who have applied for homesteads have been able to fulfill the requirements and get title to the land. Only 12 percent of all homesteads patented are now being used for farming—the purpose intended under the homestead law.

16. False. Sewage disposal is becoming a serious problem. Cook Inlet, for example, is polluted by raw sewage from the Greater Anchorage area. Cesspools in the fringe areas in both Fairbanks and Anchorage are contaminating local wells and ground water.

17. False. Only the northernmost third of the State is classed as continuous permafrost area.

18. Wolverine ruff is preferred because it is frost-proof—doesn't freeze the moisture when you breathe on it.

19. It is almost unbelievable, but Alaska has more than 3 million lakes larger than 20 acres.

20. Alaska's coastline is about 33,000 miles long; in the Lower 48, the coastline is 21,000 miles.

21. Capt. Vitus Bering, sailing under the Russian flag, sighted the St. Elias Mountain in southeastern Alaska in 1741.

22. Total population is 250,000. This is about the same as the population of Wichita, Kans.

23. Average age in Alaska is only 23 years. Its people are the youngest in the Nation. (If you guessed between 18 and 28, count your answer correct.)

24. More than 95 percent of the land is still in Federal ownership. As settlement continues and as the State selects and receives title to much of this land, the percentage will decrease.

25. The two locations in each pair are actually about the same distance from Anchorage. The ones nearer by direct distance are:

Seattle	Atlanta
Boise	Peking
Milwaukee	Stockholm

(Consider your answer correct if you guessed right on half the choices.)

Distances at the top of the world are deceiving. Alaska is not as far north as most people think it is. For example, Anchorage is almost 2,000 miles from the North Pole. Or stated another way, Boise, Idaho, is closer to Anchorage than is the North Pole. Approximate air-mile distances from Anchorage to the following cities are:

Tokyo	3, 500	Seattle	1, 400
Honolulu	2, 700	Havana	4, 000
Chicago	2, 800	Stockholm	3, 900
Washington, D.C	3, 500	Peking	3, 900

PUBLIC SALE BULLETIN BOARD

This is a compilation of the most up-to-date information possible on up-coming sales of public lands by land offices of the Bureau of Land Management. For details of land descriptions, prices, and other information pertinent to sales, you must write the individual land office concerned. In most cases, there are adjoining landowners who have statutory preference rights and may wish to exercise them to buy the land. Sale notices will point out, insofar as possible, problems relating to (1) access, (2) adjoining owner preference rights, (3) small-tract sales limitation of one per customer, and other pertinent information. When possible, all sales are scheduled far enough in advance so ample notice can be given in Our Public Lands. *Sales listed can be canceled on short notice for administrative and technical reasons. A listing of BLM land office with addresses is found on the opposite page.*

ARIZONA

Public Sale Tracts

160 acres, Cochise County, about 1½ miles south of Interstate Highway 10 and approximately 10 miles east of Bowie. Good access by county road. Utilities. Land flat to rolling, has agricultural potential. No improvements. Appraised $70 per acre.

40.96 acres, Cochise County, about 5 miles southwest of Apache. Traversed and accessible by State Highway 80. Electricity and telephone; water will have to be provided by privately-owned wells. Grazing land, flat to gently rolling foothills. Appraised $40 per acre.

2 parcels totalling 120 acres in Graham County approximately 1½ miles northeast of Duncan. Easily accessible by county roads. REA electricity and natural gas available; water must be provided by privately-owned wells. Land moderately steep to rolling foothills, limited potential for widely scattered homesites. No improvements of record. Appraised $75 per acre.

400 acres, in Cochise County, about 20 miles north of Benson. No public access; no utilities. Lands rough and broken; vegetation chiefly southern desert shrub suitable for livestock grazing. No improvements. Appraised $30 per acre.

160 acres, in Cochise County, approximately 3 miles west of Fairbanks. Access by 4-wheel drive vehicle; no utilities. Lands rough and broken, cut by gullies; vegetation southern desert shrub suitable for livestock grazing. No improvements. Appraised $60 per acre.

CALIFORNIA

(Riverside Office)

Small Tract Sales

166 tracts in 10 areas of San Bernardino County, plus one in Riverside County, are listed for auctions held each Wednesday at 10 a.m. in the Land Office, 1414 University Ave., Box 723.

Public Sale Tracts

2 tracts, one 8.58-acre tract in San Diego County, appraised at $14,000; the other, 171.29-acre tract in San Bernardino County, east of Barstow, appraised at $27,400

COLORADO

Small Tracts

Lot, .67 of an acre, 3 mi. n.w. of Boulder, near Crisman. Rough, rocky, moderately steep to very steep slopes covered with lodgepole and ponderosa pine. No domestic water. Appraised $1,760.

Lot, .68 of an acre, 3 mi. n.w. of Boulder, along Sunbeam Gulch southwest of Crisman. Rough and rocky, moderately steep to very steep slopes covered with lodgepole and ponderosa pine. No domestic water. Appraised $1,760.

IDAHO

40 acres 10 mi. n.w. of Minidoka; undulating, shallow natural drainage; sandy, silt loam soil with cheatgrass and forbs. County road access. Farming possibility. Appraised $2,000.

320 acres 5 mi. n.w. of Aberdeen. Silt loam with rock outcrops; undulating to rolling; sagebrush grass for grazing, County road. Appraised $3,200.

40 acres s.e. of Ammon, near Idaho Falls, Henry Creek drainage. 3 acres can be dry farmed. No direct access. Appraised $480.

120 acres 9 mi. e. of Salmon. Steep and mountainous. Sagebrush and bunch grasses. Grazing. No direct access. Appraised $1,200.

40 acres 7 mi. w. of Leadore, Lemhi County. County road access. 20 acres in sub-irrigated pasture; 12 acres creek bottom; 8 acres dry grazing land. Pasture grasses, alder, willow and sagebrush. Crossed by Big Eight Mile Creek. Appraised $3,240.

240 acres 2 mi. n. and 3 mi. w. of Melba, on Hat Butte, Canyon County. Mostly modestly steep with rocky hillside. Sagebrush, cheatgrass. About 40 acres have irrigated farming potential; rest usable for grazing. Near paved road. Appraised $8,800.

160 acres 3 mi. n.e. of Melba, side of Powers Butte. Generally rolling, some slopes. Sagebrush, cheatgrass; 100 acres irrigated farming potential. Near county road. Appraised $6,600.

200 acres on rim of Snake River, 2 mi. north, 6 mi. w. of Melba. County road access. Soil mostly shallow and rocky. Shadscale and budsage with cheatgrass cover. 60 acres hav

limited potential for irrigated farming; 95 acres usable for [illegible]zing, 45 acres wasteland. Appraised $6,000.

[illegible]5.88 acres 1½ mi. n.e. of Walter's Ferry. Level to steep. [illegible]out 165 acres good farming potential; 100 acres usable for grazing; 41 acres wasteland. State Highway 45 access. Appraised $22,000.

352.08 acres 2 mi. n. of Walter's Ferry. Rolling to steep. About 185 acres have irrigated farming potential; 160 acres suitable for grazing. State Highway 45 access. Appraised $20,800.

40 acres 5 mi. n., 1 mi. w. of Moreland, Bingham County. Rocky, sagebrush-grass, suitable for grazing. Appraised $440.

40 acres 10 mi. n.w. of Moreland. Mainly rocky, limited grazing; 13 acres have been cultivated and irrigated. County road. Appraised $830.

MONTANA

Public Sale Tract

40 acres grazing land, 4 mi. west of Chinook, Blaine County. Accessible by improved county road and private road. No improvements. Non-irrigable. Appraised $800.

NEVADA

Public Sale Tracts

640 acres, completely isolated, 8 mi. south of Beowawe, Eureka County. Flat with bud sage. Access from State Highway 21. Appraised $8,000.

12.5 acres, completely isolated, 2 mi. west of Yerington, Lyon County. Level, suitable for holding corral. County road access power and telephone available.

430 acres, 30 mi. north of Gerlach, Washoe County. Level with salt brush. Physical access from State Highway 34, but [illegible] legal access. Open zoning, no utilities.

(Monthly auctions are held in the Las Vegas Valley and the Reno-Carson City areas in which public land tracts are offered at public sale. Tracts offered are primarily suitable for urban or suburban development, including residential and industrial uses consistent with local land use plans, zoning and building codes and ordinances. Current listings of location, size and appraised values for specific parcels are available at the Reno Land Office.)

NEW MEXICO

Public Sale Tracts

11 tracts ranging in size from 40 acres to 1,288.50 acres, in southwest corner of Eddy County. Rough to rolling terrain with thin to moderate depth of rocky soil covered with sparse to moderate vegetation. No utilities. Appraised $9 to $12 per acre.

4 tracts, 40 to 520 acres, 2½ mi. to 9 mi. south of Corona, Lincoln County. Moderately rolling plateau to rough and mountainous. Electric power within half mile. Appraised $9 to $20 per acre.

3 tracts, 160 to 240 acres, 10 to 16 miles east of Columbus, Luna County. Grazing lands. Utilities available. Appraised $9 to $15 per acre.

OREGON

Public Sale Tracts

40 acres, about 11 mi. e. of Milton-Freewater, near Washington-Oregon border. No access. Appraised $3,435. Sale date May 9.

38.03 acres, same area as above, no access. Appraised at [illegible]3,435. Sale date May 9.

WASHINGTON

Public Sale Tracts

Lot 2, 30.20 acres, homesite property. Abuts on Wanapum Dam Reservoir, Douglas County, 22 mi. downstream from Wenatchee, 8 mi. west of Quincy. No improvements. Appraised $6,500. Sale May 3, BLM Land Office, Portland, Oreg.

106.57 acres, 25 mi. n.w. of Ritzville, Adams County. Neighboring lands farmed on fallow-small grain rotation; livestock subordinate to grain. Appraised $1,580. Sale date May 2.

WYOMING

Public Sale Tracts

40 acres, 10 miles northwest of Thermopolis, Hot Springs County. Located in Big Horn Basin area, surrounded by Big Horn Mountains on east, Copper and Owl Creek Mountains on south, Absaroka and Beartooth Mountains on west and Pryor Mountains on north. Semi-desert in character. Terrain, climate and lack of permanent water supply preclude agricultural development, except for a small portion of tract. Primarily grazing land. Highway access. Appraised $560.

360 acres—8 isolated tracts listed below which vary from nearly level to rolling and rough sagebrush rangeland. Located 30 to 40 miles northwest of Casper, Natrona County. Access limited to trails across privately-owned land except Parcel 4 which is accessible from an improved highway. No water on any of the tracts.

Parcel 1—80 acres, appraised $920.
Parcel 2—40 acres, appraised $480.
Parcel 3—40 acres, appraised $480.
Parcel 4—40 acres, appraised $700.
Parcel 5—40 acres, appraised $620.
Parcel 6—40 acres, appraised $620.
Parcel 7—40 acres, appraised $400.
Parcel 8—40 acres, appraised $320.

Bureau of Land Management Land Offices

ALASKA:
555 Cordova St.
Anchorage, Alaska 99501
516 Second Ave.
Fairbanks, Alaska 99701

ARIZONA:
Federal Bldg., Room 204
Phoenix, Ariz. 85025

CALIFORNIA:
Federal Bldg., Room 4017
Sacramento, Calif. 95814
1414 Eighth St.
Riverside, Calif. 92502

COLORADO:
14027 Federal Bldg.
Denver, Colo. 80202

IDAHO:
323 Federal Bldg.
Boise, Idaho 83701

MONTANA:
(N. Dak., S. Dak.):
Federal Bldg.
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